QUANTITATIVE APTITUDE

Crack Numbers, Conquer Percentiles!

2000+
Questions

Key Features

- Detailed Explanation Of Concepts
- Level-wise Practice exercises
- Solved Examples
- Important PYQs

By **Rahul Bathla** & **Vinit Kakriya**

Ideal for CAT, XAT, SNAP, NMAT & Other Management Exams

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1 PERCENTAGE

PART-A

This is the most important chapter for the foundation of Quantitative Aptitude from the perspective of CAT. Let's Ace it!

Meaning:

PERCENT is basically a word that is formed joining two words 'Per + Cent'. *Per means division and cent means* 100. So Percent means divided by 100. The symbol % represents per cent.

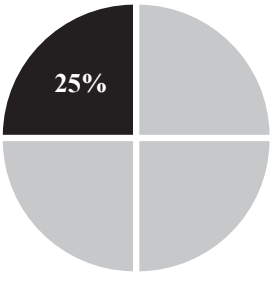
Illustration 1:

20% or 20 Per Cent = 20 / 100 = $\frac{1}{5}$ or 0.2

25% or 25 Per Cent = 25 / 100 = $\frac{1}{4}$ or 0.25

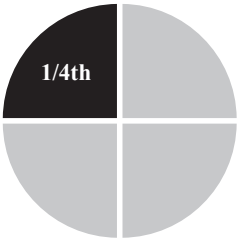
If you notice the above illustrations, you will realize that Percentage represents nothing but a fraction or a decimal or a ratio.

Observe:



Notice how student A can say 25% (25 Per 100 or cent) of the circle is dark, he is considering the entire circle to be 100. So we can say that **Percentage is nothing but a ratio from 100.**

Notice how student B can say 0.25 of the circle is dark, he is considering the entire circle to be 1. So we can say that **Percentage is nothing but a kind of a decimal.**



Notice how student C can say 1 of the four pieces of the circle is dark. So we can say that **Percentage is nothing but a fraction.** Notice we have just seen how **25% = 0.25 = 1/4** and how Percentage, Decimal and Fractions or Ratios are inter related. We will use such relations for our benefits so let's get further comfortable with this concept.

Percentage to Fraction

Simply replace the Percentage symbol (%) with divided by 100 (/100), and simplify to get the answer.

Illustration 2:

50% = 50 / 100 = 1/2 (simplification; replacement)

40% = 40 / 100 = 2/5 (simplification; replacement)

Percentage to Decimal

Simply replace the Percentage symbol (%) with divided by 100 (/100), and divide to get the answer.

Illustration 3:

50% = 50 / 100 = 0.5 (Division; replacement)

12% = 12 / 100 = 0.12 (Division; replacement)

Now, Once you have got the basics, Let's build the topic and learn some **TIME SAVING Tricks.**

- **Concept 1: Calculating a% of b**

Illustration 4:

- $a\%$ of b

$$= \frac{a}{100} \times b$$ (note that % symbol is simply replaced by/100)

$$= \frac{ab}{100}$$

Now sometimes this calculation becomes quite typical depending upon the nature of numbers – '*a* and *b*'. So let's get hold of some tricks to make it simplified and quick.

CASE 1 (GAME OF ZEROES)

Let's see the conventional method first:

- **Calculate** 20% of 240

$$= \frac{20}{100} \times 240$$

$$= \frac{1}{5} \times 240 = 48$$

#TRICK – 1 (When you see lot of 0s)

Let's have a look at above example again:

- 20% of 240

Remember % simply means 100 in denominator that simply means % (or 100) in the denominator cancels out two Zeroes in the numerator.

- 20% of 240 (Notice how the % symbol cuts down two zeroes)

  = 2 × 24 = 48

Let's have a look at one more example:

- 80% of 300

  = 8 × 30

  = 240 (With practice, we will be able to do this in mind)

CASE 2 (Using % as Good Fractions)

Let's see the conventional method first:

- 12.5% of 320

$$= \frac{12.5}{100} \times 320$$

$$= \frac{12.5 \times 32}{10}$$

$$= \frac{400}{10} = 4$$

#TRICK – 2 (% as Fractions)

Let's have a look at above example again:

- 12.5% of 320

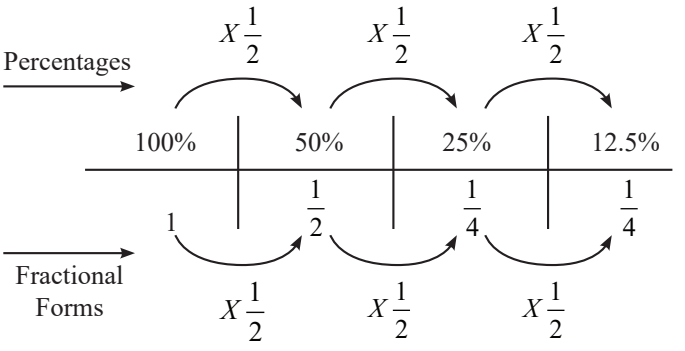
$$= \frac{12.5}{100} \times 320$$

$$= \frac{1}{8} \times 320$$

$$= \frac{1}{8} \times 320 = 40$$

(Notice, if we would have known 12.5 % or 12.5/100 is 1/8 in fraction, then we would have saved some crucial calculation time and we can also avoid silly mistakes in pressure situations)

So, it is the time when we get hold of some **fractional forms** of important **frequently asked Percentages.**



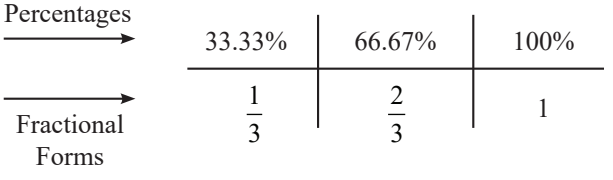
Notice, 100% = 100/100 = 1

Observe how we multiplied same factor (in above case ½) to both Percentages and their fractional forms to obtain some more standard percentages in form of fraction.

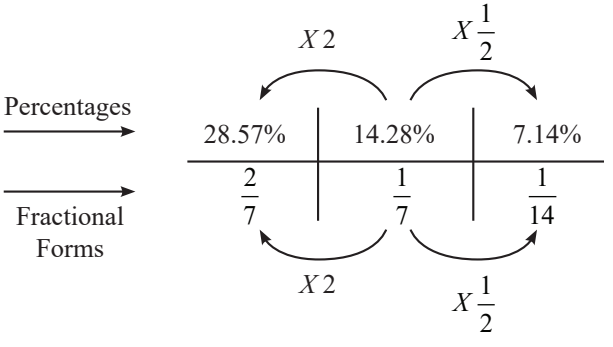
Now if a question asks us to calculate 12.5% of 328

We can directly write $\frac{1}{8} \times 328 = 41$

It is time to get hold of some more such standard % to fraction results.



Notice, how have we divided 100% in 3 equal parts



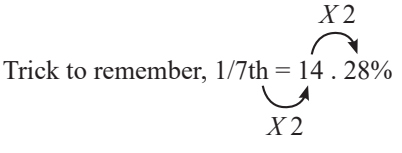


Illustration 5:

Let's have a look at above example based on above fractional forms:

- 14.28% of 77

$$= \frac{1}{7} \times 77$$

= 11

- 66.67% of 333

$$= \frac{2}{3} \times 333$$

= 222

Partnership of **11 and 9**

Notice how the multiples of 11 take 9 in the denominator.

PERCENTAGE	FRACTION	REMARKS
11.11%	$\frac{1}{9}$	**1st Multiple** of 11 takes **1 in numerator.**

22.22%	$\frac{2}{9}$	**2nd Multiple** of 11 takes **2 in numerator.**
33.33%	$\frac{3}{9}$	**3rd Multiple** of 11 takes **3 in numerator.**
44.44%	$\frac{4}{9}$	**4th Multiple** of 11 takes **4 in numerator.**
55.55%	$\frac{5}{9}$	**5th Multiple** of 11 takes **5 in numerator.**
66.66%	$\frac{6}{9}$	**6th Multiple** of 11 takes **6 in numerator.**
77.77%	$\frac{7}{9}$	**7th Multiple** of 11 takes **7 in numerator.**
88.88%	$\frac{8}{9}$	**8th Multiple** of 11 takes **8 in numerator.**

Notice how the multiples of 9 take 11 in the denominator.

PERCENTAGE	FRACTION	REMARKS
09.09%	$\frac{1}{11}$	**1st Multiple** of 9 takes **1 in numerator.**
18.18%	$\frac{2}{11}$	**2nd Multiple** of 9 takes **2 in numerator.**
27.27%	$\frac{3}{11}$	**3rd Multiple** of 9 takes **3 in numerator.**
36.36%	$\frac{4}{11}$	**4th Multiple** of 9 takes **4 in numerator.**
45.45%	$\frac{5}{11}$	**5th Multiple** of 9 takes **5 in numerator.**
54.54%	$\frac{6}{11}$	**6th Multiple** of 9 takes **6 in numerator.**
63.63%	$\frac{7}{11}$	**7th Multiple** of 9 takes **7 in numerator.**
72.72%	$\frac{8}{11}$	**8th Multiple** of 9 takes **8 in numerator.**
81.81%	$\frac{9}{11}$	**9th Multiple** of 9 takes **9 in numerator.**
90.90%	$\frac{10}{11}$	**10th Multiple** of 9 takes **10 in numerator.**

Examples:

- 88.88% of 72 (Multiples of 11 take 9 in the denominator)

  $= \frac{8}{9} \times 72$ (8th multiples takes 8 in the numerator)

  = 64

If you wish you can also get used to some more following common fractional forms of Percentages.

PERCENTAGE	FRACTION
12.5%	$\frac{1}{8}$
25%	$\frac{2}{8}$
37.5%	$\frac{3}{8}$
50%	$\frac{4}{8}$
62.5%	$\frac{5}{8}$
75%	$\frac{6}{8}$
87.5%	$\frac{7}{8}$
100%	$\frac{8}{8}$ or 1

PERCENTAGE	FRACTION
33.33 %	$\frac{1}{3}$
66.67%	$\frac{2}{3}$
100%	1

PERCENTAGE	FRACTION
16.67%	$\frac{1}{6}$
33.33%	$\frac{2}{6}$
50%	$\frac{3}{6}$
66.67%	$\frac{4}{6}$
83.33%	$\frac{5}{6}$
100%	$\frac{6}{6}$ or 1

PERCENTAGE	FRACTION
25%	$\frac{1}{4}$
50%	$\frac{1}{2}$

75%	$\frac{3}{4}$
100%	1

#TRICK – 3 (Using 10% and 1% for Natural number %)

Let us calculate 10% of 320

- 10% of 320

$$= \frac{10}{100} \times 320$$

$= 0.1 \times 320 = 32$

Observe, how we could have just pulled one decimal back to obtain 10%.

- 10 % of 320.00 = 32.00
- 10 % of 48.00 = 4.8

Let us calculate 1% of 320

- 1% of 320

$$= \frac{1}{100} \times 320$$

$= 0.01 \times 320 = 3.2$

Observe, how we could have just pulled two decimal back to obtain 1%.

- 1% of 320.00 = 3.20
- 1% of 48.00 = 0.48

Now once you have learnt, how to calculate the 10% and 1% of any number quickly, have a look at this example.

- Calculate 42% of 320

= 42% of 320

= 40% of 320 + 2% of 320 (observe 42% = 40% + 2%)

= 4(10% of 320) + 2(1% of 320) (observe 40% = 4 × 10%; 2 = 2 × 1%)

= 4(32) + 2(3.2) (observe 10% of 320 = 32 and 1% of 320 = 3.2)

= 128 + 6.4

= 134.4

- Calculate 78% of 480

= 78% of 480

= 80% of 480 − 2% of 480

= 8(10% of 480) − 2(1% of 480)

= 8(48) − 2(4.8)

= 384 − 9.6 = 374.4

#TRICK – 4 (a% of b = b% of a)

Let us calculate 10% of 80

- 10 % of 80

$$= \frac{10}{100} \times 80$$

= 8

Let us calculate 80% of 10

- 80% of 10

$$= \frac{80}{100} \times 10$$

= 8

Observe, how **a% of b = b% of a**

Now see how this fact can be used for saving our time.

- Calculate 77% of 18.18.

= 18.18 % of 77 (observe a% of b = b% of a)

$= \frac{2}{11}$ of 77 (observe 18.18% = 2/11)

= 22

SOLVED EXAMPLES

1. Calculate 18.18% of 14.28% of 154.

Sol. 18.18% of 14.28% of 154

$$= \frac{2}{\cancel{11}} \times \frac{1}{\cancel{7}} \times \frac{2}{\cancel{154}}$$

(observe 18.18% = 2/11 and 14.28% = 1/7)

$= 2 \times 1 \times 2 = 4$

2. Calculate 99% of 782.

Sol. 99% of 782

= 100% of 782 − 1% of 782 (observe 100 % of any number is the number itself)

= 782 − 7.82

= 774.18 (observe 1% of 782 is 7.82)

TEST YOURSELF

1. Calculate the following:

(*i*) 27.27 % of 44.44% of 99

(*ii*) 43 % of 340

(*iii*) 99 % of 102

(*iv*) 88% of 36.36

Answer

1. (*i*) 12 (*ii*) 146.2 (*iii*) 100.98 (*iv*) 32

- **Concept 2: a is what % of b**

To calculate a is what % of b, simply divide a by b and multiply by 100. Let's have a look at example:

- Calculate 45 is what Percentage of 180.

$$= \frac{45}{180} \times 100$$

$$= \frac{1}{4} \times 100 = 25\%$$

Notice, if you also remember Fractional forms of Percentage, you can do the above type of Question directly. Have a look -

- Calculate 45 is what Percentage of 180.

$= \frac{45}{180}$ (Calculate the fractional part)

$= \frac{1}{4}$ (Remember $\frac{1}{4}$ = 25%)

= 25% (with practice, you will be able to do such calculations in mind)

Sol. Let the total population = x

$\therefore$ Population of children $= \frac{18}{100}x$

Population of Female children = 20% of children population

i.e. 360 = 20% of $\left(\frac{18}{100}n\right)$

$360 = \frac{20}{100}\cdot\frac{18}{100}x$

$\boxed{10000 = x}$

$\therefore$ Total population of town = 10000

10. A toy shop owner gives three successive discounts of 10%, 15% & 25%. What is the overall discount given?

Sol. Let, the original price of a toy = Rs. 100

$\therefore$ Using Successive percentage concept.

$100\times\frac{90}{100}\times\frac{85}{100}\times\frac{75}{100}$ = New price

$\boxed{57.375 = \text{New Price}}$

$\therefore$ Overall discount $= \frac{100-57.375}{100} \times 100 = \boxed{42.625\%}$

11. Water tax is increased by 30% but it's consumption is decreased by 30%. Then, the increase or decrease in expenditure of the money is,

(*a*) No change (*b*) 5% decrease

(*c*) 4% increase (*d*) 9% decrease

Sol. Let, the original expenditure = Rs. 100

Water tax = 30% $\uparrow$

Consumption = 30% $\downarrow$

$\therefore$ Using Successive Percentage Concept

$100\times\frac{130}{100}\times\frac{70}{100}$ = New expenditure

$\boxed{91 = \text{New Expenditure}}$

$\therefore$ Overall decrease in Expenditure

$= \frac{100-91}{100} \times 100 = \boxed{9\%}$

CONCEPT BUILDER

1. The length of a rectangle is increased by 25%, resulting in a 10% increase in its area. By what percentage was the breadth altered?

(*a*) 12% decrease (*b*) 15% increase

(*c*) 15% decrease (*d*) 12% increase

2. A farmer spent 25% of his total earnings on seeds, 15% on fertilizers, 10% on labor, and 5% on equipment. After spending an additional 7,500 rupees on irrigation, he still had 15,000 rupees left. Find his total earnings (in rupees).

(*a*) 50,000 (*b*) 35,000

(*c*) 40,000 (*d*) 55,000

3. A metal rod undergoes two sequential thermal processes. First, its length increases by 12.5%. Later, due to cooling, its length reduces by $9\frac{1}{11}\%$. After these processes, the final length of the rod is 247.5 cm. What was the original length (in cm) of the rod before the thermal changes?

(*a*) 242 (*b*) 244

(*c*) 246 (*d*) 248

4. Freshly molded clay used for pottery contains $66\frac{2}{3}\%$ water, while the same clay after proper drying contains only $16\frac{2}{3}\%$ water. Find how much dried clay (in kg) can be obtained from 360 kg of freshly molded clay.

5. Pullo's savings and expenditures are in the ratio of 5 : 2. His income increases by 20%, while his expenses grow by 10%. By what percentage do his savings increase as a result?

(*a*) 20 (*b*) 22

(*c*) 24 (*d*) 26

6. Ravi received 50% in a competitive quiz.

Following a review, his score improved by 30%, yet he still missed qualifying by 15 points. Meanwhile, Priya, who qualified by 25 points. Find the percentage of scores of Priya.

7. In a school, 60% of students are boys. On a particular day, 20% of the boys and 25% of the girls were absent. If 22% of all students were absent that day, what percentage of the absent students were boys?

(*a*) 53.33% (*b*) 54.54%

(*c*) 55.55% (*d*) 57.14%

8. In a class, 60% are boys. 25% of the boys wear glasses. If 30% of the entire class wears glasses, what percentage of the girls wear glasses?

(*a*) 33.33% (*b*) 35%

(*c*) 37.5% (*d*) 40%

9. A library initially had 40% fiction books. After adding 200 non-fiction books, fiction books dropped to 30%. How many books did the library have originally?

27. [74] As the average of all the three together is nothing but the marks scored by Samarth, this means that Samarth would have scored average marks of the other two which would be 0.5 (*56 + 92) = 74%*

28. (*c*) Let the initial viwership be '*x*'

So, current viwership =

$$x\left(1+\frac{50}{100}\right)\left(1-\frac{40}{100}\right)\left(1-\frac{20}{100}\right)\times\left(\frac{3}{2}\times\frac{3}{5}\times\frac{4}{5}\right)=4,24,800$$

$$\Rightarrow x=4,24,800\times\frac{50}{36}=11,800\times50=5,90,000$$

29. (*b*) Let her original income = 100

Expenditure = 77% of 100 = 0.77 × 100 = 77
Expenditure on Rent = 25% of 77 = 0.25 × 77 = 19.25
Now, income increases by 10%:
New income = 100 + (10% of 100) = 100 + 10 = 110
Expenditure remains the same:
Expenditure on Rent = 19.25

To find the percentage of new income spent on Rent:

$$\text{Percentage}=\frac{19.25}{110}\times100=17.5\%$$

Rani is spending 17.5% of her new income on Rent.

30. [0] Let P's weight = 30*x*,

Then *Q* = 20*x*

$$\left(33\frac{1}{3}\%\text{ less implies }\frac{2}{3}\text{ of the weight of }P\right)$$

R = 18*x*, (10% less means 20*x* – 2*x*)

$$S=16x,\left(11\frac{1}{9}\%\text{ less implies }\frac{1}{9}\text{ less}\right)$$

$$T=30x\left(87.5\text{ more implies }\frac{7}{8}\text{ more}\right)$$

As the weights of *P* and *T* are equal, the answer would be 0%.

BE A PRO!

1. At a school fair, 40% of the visitors were adults and 60% were children. Then half of the adults left, and 20 children left. After that, the children made up 70% of the remaining visitors. How many adults must be added so that, at that point, the numbers of adults and children become equal?

2. In a customer preference survey between two competing products, 25% of the respondents did not provide any feedback. Among those who responded, 20% of the feedback submissions were marked as invalid. Product *B* received 25% of the total valid feedback, making it the less preferred option and losing to Product *A* by 4500 votes. Find the total number of feedback responses received.

(*a*) 10,500 (*b*) 10,250
(*c*) 11,500 (*d*) 11,250

3. In a school $16\frac{2}{3}\%$, of the students in a training program were girls and the remaining were boys. $14\frac{2}{7}\%$ of the boys and $85\frac{5}{7}\%$ of the girls successfully completed the training program, while 24 girls did not complete it. How many boys did not complete the program?

4. A botanist is observing the growth reduction of two different plant species under a controlled environment. The height of Plant *A* decreases by 25% every hour due to a growth inhibitor, while the height of Plant *B* decreases by 40% per hour. After 3 hours, both plants have the same height. If the initial height of Plant A was 64 meters, what was the initial height of Plant *B* (In meters)?

5. In a local art supply store, Riya bought equal quantities of canvas and paint in both April and May. However, due to a 10% price increase in canvas and a 25% hike in paint prices, her total expenditure in May was ₹150 more than in April. If she spent ₹500 on paint in May, find how much she spent on canvas in May.

(*a*) 440 (*b*) 550
(*c*) 660 (*d*) 770

6. In a company, 25% of the employees are parttime workers. Among them, 60% are skilled, while the overall skill rate of all employees is 40%. If *K*% of the total employees are unskilled full-time workers, what is the value of *K*?

7. After a sudden war situation in 2025 disrupted plans, Rahul rescheduled a company event. He found that the equipment costs rose 50%, and labour charges increased from 40% to 50% of equipment costs. Originally, 360 employees were invited. How many can attend within the original budget?

8. The daily incomes of *A*, *B*, *C* and *D* are 20%, 25%, 30% and 35% of ₹2100, respectively. Their expenditures are 35%, 40%, 45% and 50% of *K*, respectively. If *B* saves 20% of his income, where *B*'s expenses is 40% of *K*, then what percentage of *D*'s expenses is *A*'s savings?

9. A water tank loses 50% of its total weight when 60% of the water inside it is drained out. What can be the possible weight of the tank when it is 30% empty, given that the weight of the completely empty tank is a natural number?

(*a*) 10 (*b*) 22
(*c*) 12 (*d*) 18

10. Ankita runs a boutique garden store, where she buys tulips and daisies in equal quantities every month. Recently, she noticed an increase in her expenses because the prices of these flowers rose:

- The price of tulips went up by 30%.
- The price of daisies increased by 20%.

28. (*b*) Let the cost of the circus ticket be 'a' and the cost of the swing ticket be 'b' then

$a = 20\%$ of $(A - b) = (A - b) \times 0.2$

$b = 5\%$ of $(A - a) = (A - a) \times 0.05$

to find $(a + b)/A$, we need to find both a and b in terms of A.

By solving the above, we will get

$$a = \frac{0.19A}{0.99}, b = \frac{0.04A}{0.99}$$

Hence $\frac{(a+b)}{A} \times 100 = 23.23\% = 23\%$ (about)

29. (*c*) Let this happens 'n' years after 2022.

then, $1000 \times (3^n) > \left(\frac{1}{2}\right)^n \times 500000$

$3^n > \left(\frac{1}{2}\right)^n \times 500$

$\Rightarrow n$ must be 4

$n = 4$

So at the end of 2026 Ashish will have more money than Alok for the first time.

30. (*c*) Let 90 be the no. staffs in the bank.

Therefore, total female staffes = $\frac{(90 \times 2)}{9} = 20$

[Since, $\frac{200}{9}\% = \frac{2}{9}$]

As no. of femlales married = 45% of 20 = 9

No. of married females having children = $\frac{200}{9}\%$ of $9 = 2$

Now, total male staffs = total – no. of female staffs = 90 – 20 = 70

$77\frac{1}{7}\%$ of males staff are married = $77\frac{1}{7}\% \times 70 = 54$

No. of married male staff having children = $\frac{250}{9}\% \times 54 = 15$

Total staff having children = 2 + 15 = 17

Required percentage = $\frac{17}{90} \times 100 = 18.88\%$ or 19% approx

CAT PREVIOUS YEAR QUESTIONS

1. The salaries of three friends Sita, Gita and Mita are initially in the ratio 5 : 6 : 7, respectively. In the first year, they get salary hikes of 20%, 25% and 20% respectively. In the second year, Sita and Mita get salary hikes of 40 % and 25%, respectively, and the salary of Gita becomes equal to the mean salary of the three friends. The salary hike of Gita in the second year is **(CAT 2023 SLOT 1)**

(*a*) 25% (*b*) 30%
(*c*) 28% (*d*) 26%

2. The population of a town in 2020 was 100000. The population decreased by y% from the year 2020 to 2021, and increased by *x*% from the year 2021 to 2022, where x and y are two natural numbers. If population in 2022 was greater than the population in 2020 and the difference between x and y is 10, then the lowest possible population of the town in 2021 was: **(CAT 2023 SLOT 3)**

(*a*) 72000 (*b*) 73000
(*c*) 75000 (*d*) 74000

3. The total of male and female populations in a city increased by 25% from 1970 to 1980. During the same period, the male population increased by 40% while the female population increased by 20%. From 1980 to 1990, the female population increased by 25%. In 1990, if the female population is twice the male population, then the percentage increase in the total of male and female populations in the city from 1970 to 1990 is **(CAT 2021 SLOT 3)**

(*a*) 68.75 (*b*) 68.50
(*c*) 68.25 (*d*) 69.25

4. In a tournament, a team has played 40 matches so far and won 30% of them. If they win 60% of the remaining matches, their overall win percentage will be 50%. Suppose they win 90% of the remaining matches, then the total number of matches won by the team in the tournament will be **(CAT 2021 SLOT 3)**

(*a*) 86 (B) 84
(*c*) 78 (*d*) 80

5. In the final examination, Bishnu scored 52% and Asha scored 64%. The marks obtained by Bishnu is 23 less, and that by Asha is 34 more than the marks obtained by Ramesh. The marks obtained by Geeta, who scored 84% is **(CAT 2020 SLOT 3)**

(*a*) 399 (*b*) 439
(*c*) 357 (*d*) 417

6. Meena scores 40% in an examination and after review, even though her score is increased by 50%, she fails by 35 marks. If her post-review score is increased by 20%, she will have 7 marks more than the passing score. The percentage score needed for passing the examination is **(CAT 2019 SLOT 1)**

(*a*) 75 (*b*) 80
(*c*) 60 (*d*) 70

7. The income of Amala is 20% more than that of Bimala and 20% less than that of Kamala. If Kamala's income goes down by 4% and Bimala's goes up by 10%, then the percentage by which Kamala's income would exceed Bimala's is nearest to **(CAT 2019 SLOT 1)**

(*a*) 28 (*b*) 29
(*c*) 31 (*d*) 32

8. In an examination, the maximum possible score is N. While the pass mark is 45% of N. A candidate obtains 36 marks, but falls short of the pass mark by 68%. Which one of the following is then correct? **(CAT 2018 SLOT 1)**

(*a*) $N \le 200$ (*b*) $243 \le N \le 252$

(*c*) $N \ge 253$ (*d*) $201 \le N \le 242$

9. Out of the shirts produced in a factory, 15% are defective, while 20% of the rest are sold in the domestic market. If the remaining 8840 shirts are left for export, then the number of shirts produced in the factory is **(CAT 2017 SLOT 2)**

(*a*) 13600 (*b*) 13000

(*c*) 13400 (*d*) 14000

10. In a village, the production of food grains increased by 40% and the per capita production of food grains increased by 27% during a certain period. The percentage by which the population of the village increased during the same period is nearest to **(CAT 2017 SLOT 2)**

(*a*) 16 (*b*) 13

(*c*) 10 (*d*) 7

11. After two successive increments, Gopal's salary became 187.5% of his initial salary. If the percentage of salary increase in the second increment was twice of that in the first increment, then the percentage of salary increase in the first increment was **(CAT 2024 SLOT 3)**

(*a*) 27.5 (*b*) 30

(*c*) 25 (*d*) 20

12. In an examination, the score of *A* was 10% less than that of *B*, the score of *B* was 25% more than that of *C*, and the score of *C* was 20% less than that of *D*. If *A* scored 72, then the score of *D* was **(CAT 2019 SLOT 2)**

13. Arun's present age in years is 40% of Barun's. In another few years, Arun's age will be half of Barun's. By what percentage will Barun's age increase during this period? **(CAT 2017 SLOT 1)**

14. Ravi invests 50% of his monthly savings in fixed deposits. Thirty percent of the rest of his savings is invested in stocks and the rest goes into Ravi's savings bank account. If the total amount deposited by him in the bank (for savings account and fixed deposits) is Rs 59500, then Ravi's total monthly savings (in Rs) is: **(CAT 2017 SLOT 1)**

15. In a group of people, 28% of the members are young while the rest arc old. If 65% of the members are literates, and 25% of the literates are young, then the percentage of old people among the illiterates is nearest to **(CAT 2020 SLOT 1)**

(*a*) 59 (*b*) 62

(*c*) 66 (*d*) 55

16. In 2010, a library contained a total of 11500 books in two categories-fiction and non-fiction. In 2015, the library contained a total of 12760 books in these two categories. During this period, there was 10% increase in the fiction category while there was 12% increase in the non-fiction category. How many fiction books were in the library in 2015? **(CAT 2019 SLOT 2)**

(*a*) 6600 (*b*) 6160

(*c*) 6000 (*d*) 5500

17. The number of girls appearing for an admission test is twice the number of boys. If 30% of the girls and 45% of the boys get admission, the percentage of candidates who do not get admission is: **(CAT 2017 SLOT 1)**

(*a*) 35 (*b*) 50

(*c*) 60 (*d*) 65

18. In a class, 60% of the students are girls and the rest are boys. There are 30 more girls than boys. If 68% of the students, including 30 boys,pass an examination, the percentage of the girls who do not pass is **(CAT 2019 SLOT 1)**

19. A box has 450 balls, each either white or black, there being as many metallic white balls as metallic black balls. If 40% of the white balls and 50% of the black balls arc metallic, then the number of non-mctallic balls in the box is **(CAT 2021 SLOT 2)**

ANSWER KEY

1. (*d*)	**2.** (*b*)	**3.** (*a*)	**4.** (*b*)	**5.** (*a*)
6. (*d*)	**7.** (*c*)	**8.** (*b*)	**9.** (*b*)	**10.** (*c*)
11. (*c*)	**12.** [80]	**13.** [20]	**14.** [70000]	**15.** (*c*)
16. (*a*)	**17.** (*d*)	**18.** [20]	**19.** [250]	

HINTS & SOLUTIONS

1. (*d*) S : G : M = 5 : 6 : 7

1^{st} year, $S : G : M = 5\left(\frac{120}{100}\right) : 6\left(\frac{125}{100}\right) : 7\left(\frac{120}{100}\right)$

$= 20 : 25 : 28$

2^{nd} year, $S : G : M = 20\left(\frac{140}{100}\right) : y : 28\left(\frac{125}{100}\right)$

$= 28 : y : 35$

Let, $G = y$

Now given, $y = \frac{28 + y + 35}{3}$

$3y = 63 + y$

$y = \frac{63}{2}$

$$\% \text{ increase} = \frac{\frac{63}{2} - 25}{25} \times 100\%$$

$= 13 \times 2 = 26\%$ answer

2. (*b*) $P_{2020} = 100000$

$\downarrow -y$

$P_{2021} = \square$

$\downarrow +x = (y + 10)$

$P_{2020} = \square > 100000$

Here $x > y$ {because P_{2022} is increased from P_{2020}}

$x - y = 10 \Rightarrow x = y + 10$

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